

## CLAIMS

The embodiments of an invention in which an exclusive property or right is claimed are defined as follows:

- 5 1. A method for optically sensing the presence of an object on a conveyor, said method comprising the steps of:

detecting light reflected from an object transported on a conveyor  
utilizing at least one optical component when said object enters a sensing  
10 zone; and

conditioning said reflected light to provide an output signal, which is  
utilized to provide controlling information necessary to route said object to a  
proper location and prevent damage to said object from other objects as said  
15 object is being transported upon said conveyor.

2. The method of claim 1 further comprising the step of:

emitting light, such that said light is reflected by said object and  
20 thereafter detected utilizing said at least one optical component.

3. The method of claim 1 further comprising the step of:

arranging said at least one optical component to provide control over  
25 a sensing distance.

4. The method of claim 3 wherein said sensing distance comprises a  
maximum sensing distance.

- 30 5. The method of claim 3 wherein said sensing distance comprises a  
minimum sensing distance.

6. The method of claim 1 wherein said at least one optical component comprises an optical receiver.

7. The method of claim 1 wherein said at least one optical component  
5 comprises an optical emitter.

8. The method of claim 1 wherein said at least one optical component comprises a plurality of optical components.

10 9. The method of claim 8 further comprising the step of:

configuring said plurality of optical components to comprise at least one optical emitter, at least one optical receiver, and at least one associated optical lens.

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10. The method of claim 9 further comprising the step of:

maintaining said at least one optical emitter, said at least one optical receiver, and said at least one associated optical lens in a sensor housing.

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11. The method of claim 10 further comprising the step of:

connecting said plurality of optical components to a distributed controller.

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12. The method of claim 11 further comprising the step of:

configuring said distributed controller to comprise electronic circuitry which supplies power to said at least one optical emitter, amplifies a signal  
30 output from said at least one optical receiver, performs required signal conditioning and processing, and provides an interface to a microcontroller.

13. A method for optically sensing the presence of an object on a conveyor, said method comprising the steps of:

5       arranging a plurality of optical components to provide control over a sensing distance;

10       configuring said plurality of optical components to comprise at least one optical emitter, at least one optical receiver, and at least one associated optical lens;

15       detecting light reflected from an object transported on a conveyor utilizing said plurality of optical components when said object enters a sensing zone; and

20       conditioning said reflected light to provide an output signal, which is utilized to provide controlling information necessary to route said object to a proper location and prevent damage to said object from other objects as said object is being transported upon said conveyor.

25       14. A system for optically sensing the presence of an object on a conveyor, said system comprising:

30       detecting module for detecting light reflected from an object transported on a conveyor utilizing at least one optical component when said object enters a sensing zone; and

35       conditioning module for conditioning said reflected light to provide an output signal, which is utilized to provide controlling information necessary to route said object to a proper location and prevent damage to said object from other objects as said object is being transported upon said conveyor.

15. The system of claim 14 further comprising a light emitter, wherein light

from said light emitter is reflected by said object and thereafter detected utilizing said at least one optical component.

16. The system of claim 14 wherein said at least one optical component is  
5 arranged to provide control over a sensing distance.

17. The system of claim 16 wherein said sensing distance comprises a maximum sensing distance.

10 18. The system of claim 16 wherein said sensing distance comprises a minimum sensing distance.

15 19. The system of claim 15 wherein said at least one optical component comprises an optical receiver.

20. The system of claim 15 wherein said at least one optical component comprises an optical emitter.

20 21. The system of claim 14 wherein said at least one optical component comprises a plurality of optical components.

25 22. The system of claim 21 wherein said plurality of optical components is configured to comprise at least one optical emitter, at least one optical receiver, and at least one associated optical lens.

23. The system of claim 22 wherein said at least one optical emitter, said at least one optical receiver, and said at least one associated optical lens are maintained in a sensor housing.

30 24. The system of claim 24 wherein said plurality of optical components are connected to a distributed controller.

25. The system of claim 24 wherein said distributed controller is configured to comprise electronic circuitry which supplies power to said at least one optical emitter, amplifies a signal output from said at least one optical receiver, performs required signal conditioning and processing, and  
5 provides an interface to a microcontroller.

26. A system for optically sensing the presence of an object on a conveyor, said system comprising:

10 a plurality of optical components arranged to provide control over a sensing distance;

said plurality of optical components configured to comprise at least one optical emitter, at least one optical receiver, and at least one associated  
15 optical lens;

detecting module for detecting light reflected from an object transported on a conveyor utilizing said plurality of optical components when said object enters a sensing zone; and  
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conditioning module for conditioning said reflected light to provide an output signal, which is utilized to provide controlling information necessary to route said object to a proper location and prevent damage to said object from other objects as said object is being transported upon said conveyor.  
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